Biodiversity Data Journal 13: e148957
doi: 10.3897/BDJ.13.e148957

open access

Taxonomy & Inventories

Range extension of *Amolops himalayanus* (Boulenger, 1888) (Anura, Ranidae), first record from China and first description of the juvenile of this species

JiShan Wang[‡], Shuo Liu[§,|], Hengying Wang[‡], Mo Wang[¶], Dingqi Rao[#]

‡ Southwest Survey and Planning Institute of National Forestry and Grassland Administration, Kunming, China
§ Kunming Natural History Museum of Zoology, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, China
| Yunnan Key Laboratory of Biodiversity Information, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, China
¶ Key Laboratory of Biodiversity Conservation in Southwest China (State Forestry and Grassland Administration) / Yunnan Academy of Biodiversity, Southwest Forestry University, Kunming, China
# Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, China

Corresponding author: Mo Wang (wangmo139@live.cn), Dingqi Rao (raodq@mail.kiz.ac.cn)

Academic editor: Bin Wang

Received: 06 Feb 2025 | Accepted: 07 Mar 2025 | Published: 14 Mar 2025

Citation: Wang J, Liu S, Wang H, Wang M, Rao D (2025) Range extension of *Amolops himalayanus* (Boulenger, 1888) (Anura, Ranidae), first record from China and first description of the juvenile of this species. Biodiversity Data Journal 13: e148957. https://doi.org/10.3897/BDJ.13.e148957

Abstract

Background

Amolops himalayanus (Boulenger, 1888) is a poorly-known species which was originally described from north-eastern India over a hundred years ago. Currently, *A. himalayanus* is known only from India and Nepal and there is no reliable re-description or photos of this species reported.

© Wang J et al. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

New information

We record *Amolops himalayanus* (Boulenger, 1888) from China for the first time, based on one specimen collected from Yadong County, Xizang Autonomous Region, China. Although the specimen from China is a juvenile, however, phylogenetically, it was clustered with the syntype of *A. himalayanus* and the specimens of this species from Nepal with strong support and the genetic distance between the specimen from China and the syntype of *A. himalayanus* was only 0.7% in 16S gene sequences. We provide a description of the juvenile specimen and, in addition, we provide reliable photos of this species in life for the first time.

Keywords

16S rRNA, distribution, morphology, Yadong County, Xizang Autonomous Region

Introduction

The genus *Amolops* Cope, 1865 is the most speciose genus in the family Ranidae (Frost 2025). This genus is widely distributed from Nepal, northern India, western and southern China to Malay Peninsula (Dever et al. 2012, Pham et al. 2019, Wu et al. 2020, Mahony et al. 2022, Tang et al. 2023, Li et al. 2024, Wu et al. 2024, Frost 2025). It currently includes 88 species, which can be subdivided into 10 species groups (Liu et al. 2025, Nguyen et al. 2025, Wu et al. 2025). In China, 60 species of *Amolops* have been recorded, 16 of which were found in Xizang Autonomous Region (Frost 2025, Huang et al. 2025, Liu et al. 2025).

Amolops himalayanus (Boulenger, 1888) is a poorly-known species which was originally described from Darjeeling India over a hundred years ago and was later recorded in Nepal and Bhutan (Nidup et al. 2016, Limbu et al. 2020). However, Mahony et al. (2022) reviewed the species of *Amolops* in Bhutan and removed *A. himalayanus* from Bhutan's amphibian checklist and confirmed that this species is present in Nepal. Currently, *A. himalayanus* is known only from north-eastern India and eastern Nepal (Frost 2025).

During our field survey in Xizang Autonomous Region, China, in 2017, a specimen of *Amolops* was collected from Yadong County. As this specimen is a juvenile, it cannot be accurately identified morphologically, we conducted molecular analysis for it and the result indicated that it is *A. himalayanus*. Therefore, we report the distribution of this species in China for the first time and provide a description of the specimen collected from China.

Materials and methods

The field survey was carried out during the implementation of the General Survey on Forest Harmful Organisms project in Xizang, China. The frog specimen was collected as the certificate of forest pest's natural enemy. After being photographed, the specimen was preserved in 75% ethanol and was deposited at Kunming Natural History Museum of Zoology, Kunming Institute of Zoology, Chinese Academy of Sciences (KIZ).

Measurements were taken with a digital caliper to the nearest 0.1 mm. The methodology of measurements followed Wu et al. (2024): SVL, snout-vent length, measured from the tip of the snout to the vent; HL, head length, measured from the tip of the snout to the angle of the jaw; HW, head width, measured at the widest point of the head; SL, snout length, measured from the tip of the snout to the anterior corner of the eye; INS, internasal space, measured between the nares; IOS, interorbital space, measured at the narrowest point between the eyelids; NED, nasal to eye distance, measured from the anterior corner of the eye to the centre of the nostril; UEW, upper eyelid width, measured at the maximal width of the upper eyelid; ED, eye diameter, measured between the anterior and posterior corners of the eye; TD, tympanum diameter, measured at the maximal diameter of the tympanum; LAHL, lower arm and hand length, measured from the elbow to the tip of the third finger; HND, hand length, measured from the proximal edge of the inner metacarpal tubercle to the tip of the third finger; LAD, lower arm diameter, measured at the maximal diameter of the lower arm; FEM, femoral length, measured from the cloaca to the knee; TIB, tibia length, measured from the knee to the heel; FTL, foot length, measured from the proximal end of the inner metatarsal tubercle to the tip of the fourth toe.

Total genomic DNA was extracted from liver tissue sample. A partial fragment of the mitochondrial 16S rRNA gene (16S) was amplified and sequenced using the primers 16Sar (5'-CGCCTGTTTAYCAAAAACAT-3') and 16Sbr (5'-CCGGTYTGAACTCAGAT CAYGT-3') (Hedges 1994). The experimental protocols of amplification and sequencing followed Wu et al. (2024). The sequence was assembled using SeqMan in Lasergene 7.1 (Burland 2000). The new sequences have been deposited in GenBank and other sequences used in this study were obtained from GenBank (Table 1).

Sequences were aligned using MAFFT 7 (Katoh and Standley 2013) with default parameters. The best substitution models for Bayesian Inference (GTR+F+I+G4) and Maximum Likelihood phylogenetic analysis (GTR+F+R4) were selected using the Akaike Information Criterion in ModelFinder (Kalyaanamoorthy et al. 2017). The technical computation methods for Bayesian Inference and Maximum Likelihood analysis and genetic divergences calculation were the same as those in Liu et al. (2024).

Table 1.

Samples used for the phylogenetic analyses in this study.

Species	Voucher	Locality	Accession
Amolops adicola	BNHS 6121	Upper Siang, Arunachal Pradesh, India	MZ229772
Amolops afghanus	KIZ 048431	Husa, Yunnan, China	MN953654
Amolops ailao	GXNU YU000004	Xiping, Yunnan, China	MN650754
Amolops akhaorum	FMNH 271355	Vieng Phou Kha, Luang Namtha, Laos	FJ417158
Amolops albispinus	SYS a003452	Shenzhen, Guangdong, China	MK263247
Amolops aniqiaoensis	KIZ 011136	Xizang, China	MN953658
Amolops archotaphus	CUMZ A 2000.62	Doi Inthanon, Chiang Mai, Thailand:	FJ417124
Amolops attiguus	NCSM 79166	Anh Son, Nghe An, Vietnam	OQ994729
Amolops australis	LSUHC 7673	Endau-Rompin, Peta, Malaysia	MF061745
Amolops beibengensis	KIZ 016397	Medog, Xizang, China	MN953662
Amolops bellulus	CAS 233986	Tengchong, Yunnan, China	FJ417126
Amolops chankaya	V/A/NERC/ZSI/1771	West Kameng, Arunachal Pradesh, India	ON025582
Amolops chaochin	CIB 116971	Chongzhou, Sichuan, China	MZ702027
Amolops chayuensis	SYS a007509	Baxoi, Xizang, China	MK573820
Amolops chunganensis	SYS a004212	Jinggangshan, Jiangxi, China	MK263263
Amolops compotrix	FMNH 256500	Nakai, Khammouan, Laos	FJ417141
Amolops cremnobatus	KIZ 011621	Puhu National Reserve, Thanhhoa, Vietnam	MN953672
Amolops cucae	AMNH 168729	Van Ban, Lao Cai, Vietnam	FJ417145
Amolops daiyunensis	KIZ 08991	Daiyunshan, Fujian, China	MN953675
Amolops daorum	ROM 38501	Lao Cai, Sa Pa, Vietnam	FJ417150
Amolops deng	KIZ 014116	Zayü, Xizang, China	MN953695
Amolops formosus	KIZ 012533	Gyirong, Xizang, China	MN953682
Amolops gerbillus	KIZ 014086	Medog, Xizang, China	MN953744
Amolops gerutu	RMB 21077	Gunung Tebu, Terengganu, Malaysia	MF061721
Amolops granulosus	SCUM 045823HX	Dayi, Sichuan, China	MN953680
Amolops hainanensis	SCUM 050243YJ	Wuzhishan, Hainan, China	MN953687
Amolops himalayanus	BMNH 1947.2.3.83	Darjeeling, West Bengal, India	SAMN28238802
Amolops himalayanus	KIZ 040227	Mabu, Ilam, Nepal	MN953713
Amolops himalayanus	KIZ 040228	Maimajhuwa, Ilam, Nepal	MN953714
Amolops himalayanus	SH 2789	Rakse village, Mechi, Nepal	MN953712
Amolops himalayanus	KIZ 2017002	Yadong, Xizang, China	PV241793
Amolops hongkongensis	ROM 29014	Hong Kong, China	MN953691
Amolops huanglianshanensis	KIZ 2023094	Lvchun, Yunnan, China	PQ202849

Species	Voucher	Locality	Accession
Amolops indoburmanensis	CAS 233204	Haka, Chin, Myanmar	MN953693
Amolops iriodes	AMNH 163926	Vi Xuyen, Ha Giang, Vietnam	FJ417152
Amolops jinjiangensis	SCUM 050434CHX	Deqing, Yunnan, China	MN953700
Amolops kaulbacki	SCUM 050402CHX	Pianma, Yunnan, China	MN953736
Amolops kohimaensis	WIIADA 751	Kohima, Nagaland, India	MZ229774
Amolops kottelati	NCSM 79617	Thaphabhat, Bolikhamxay, Laos	OQ994724
Amolops larutensis	KUHE 15488	Perak, Malaysia	AB211484
Amolops lifanensis	SYS a005374	Lixian, Sichuan, China	MK573809
Amolops loloensis	SCUM 045806HX	Xichang, Sichuan, China	MN953704
Amolops mahabharatensis	CDZMTU 0110	Chitwan, Bagmati, Nepal	MT124507
Amolops mantzorum	SCUM 045817HX	Wolong, Sichuan, China	MN953706
Amolops marmoratus	KIZ 013411	Huai Hea, Chiang Mai, Thailand	MN953708
Amolops medogensis	SYNU 04II6216	Medog, Xizang, China	MN953710
Amolops mengdingensis	KIZ 20160266	Mengding, Yunnan, China	MK501809
Amolops minutus	IEBR Amolops5142	Tam Duong, Lai Chau, Vietnam	PQ346023
Amolops monticola	WIIADA 544	Tarku, Sikkim, India	MZ229773
Amolops nepalicus	CDZMTU 0148	Lamatar, Taplejung, Nepal	MT124520
Amolops nyingchiensis	SYS a006679	Medog, Xizang, China	MK573814
Amolops pallasitatus	SYNU 1507034	Dinggye, Xizang, China	MK573816
Amolops panhai	FMNH 268355	Huay Yang, Prachuap Khiri Khan, Thailand	MN953720
Amolops putaoensis	GXNU W011	Putao, Kachin, Myanmar	MT901383
Amolops ricketti	HDSK 0043	Wuyishan, Fujian, China	MN953743
Amolops sengae	FMNH 258376	Kasi, Vientiane, Laos	OQ994715
Amolops shihaitaoi	GXNU YU000353	Hekou, Yunnan, China	OK754591
Amolops shuichengicus	SYS a004956	Shuicheng, Guizhou, China	MK604845
Amolops siju	D414	Siju, Meghalaya, India	OM174172
Amolops sinensis	SYS a007107	Yingde, Guangdong, China	MK263299
Amolops spinapectoralis	ROM 37375	Ngoc Linh, Kon Tum, Vietnam	MN953726
Amolops tanfuilianae	AMS R 171526	Con Cuong, Nghe An, Vietnam	OQ994640
Amolops tawang	V/A/NERC/ZSI/1772	Tawang, Arunachal Pradesh, India	ON025581
Amolops teochew	SYS a008705	Chaozhou, Guangdong, China	MZ447970
Amolops terraorchis	Amolops_331	Arunachal Pradesh, India	MW794278
Amolops torrentis	SCUM 050253YJ	Hainan, China	EF453744
Amolops tuanjieensis	GXNU YU 110003	Gengma, Yunnan, China	MN832772
Amolops tuberodepressus	SCUM 050433CHX	Jingdong, Yunnan, China	MN953729
Amolops viridimaculatus	KIZ 048487	Tengchong, Yunnan, China	MN953731

Species	Voucher	Locality	Accession
Amolops vitreus	FMNH 258187	Phongsaly, Phongsaly, Laos	FJ417164
Amolops wangyali	SCZM 2019.07.18.1	Bodidrang Chhu, Trashigang, Bhutan	ON462441
Amolops wangyufani	KIZ 014067	Zayü, Xizang, China	MN953740
Amolops wenshanensis	KIZ 021425	Xichou, Yunnan, China	MN953724
Amolops wuyiensis	HDSK 0042	Wuyishan, Fujian, China	MN953742
Amolops xinduqiao	KIZ 041127	Kangding, Sichuan, China	MN953764
Amolops yangi	KIZ 050788	Fugong, Yunnan, China	PP097200
Amolops yatseni	SYS a006807	Zhongshan, Guangdong, China	MK263290
Amolops yunkaiensis	SYS a003979	Yangchun, Guangdong, China	MK263253
Odorrana jingdongensis	KIZ 46977	Jingdong, Yunnan, China	MN953755

Taxon treatment

Amolops himalayanus (Boulenger, 1888)

Material

a. scientificName: *Amolops himalayanus*; country: China; stateProvince: Xizang; locality: Pangda Village, Xiayadong Township, Yadong County, Rikaze City; verbatimElevation: 1860 m; verbatimCoordinates: 27°15'13"N 89°1'16"E; eventRemarks: collected by Hengying Wang on 27 July 2017; individualCount: 1; lifeStage: juvenile; catalogNumber: KIZ 2017002; basisOfRecord: preserved specime; occurrenceID: 43DC4C6E-ED61-558F-8083-2CF830E39168

Description of the specimen from China

Morphological measurements of the specimen (Fig. 1) are provided in Table 2. SVL 22.9 mm; head moderate long (HL/SVL 0.38), slightly longer than wide (HL/HW 1.08); snout moderate long (SL/SVL 0.16), projecting beyond lower jaw; canthus rostralis distinct; loreal region slightly concave; distance from nostril to snout tip slightly smaller than distance from eye to nostril; internarial distance slightly greater than interorbital distance (INS/IOS 1.07); upper eyelid width almost equal to interorbital distance (UEW/IOS 1.05); pupil oval, horizontal; tympanum distinct, small (TD/ED 0.27); tympanum to eye distance greater than tympanum diameter; pineal spot present, indistinct.

Fore-limb relatively long; relative length of fingers III > IV > II > I; tips of outer three fingers expanded into discs, circummarginal grooves present on tips of outer three fingers, absent on first finger; webbing between fingers absent; subarticular tubercles distinct, oval, formula 1, 1, 2, 2; supernumerary tubercles absent; metacarpal tubercles indistinct.

Table 2.

Measurements (in mm) of the specimen of *Amolops himalayanus* from China (for abbreviations, see Material and Methods).

	KIZ 2017002		KIZ 2017002
SVL	22.9	ED	3.7
HL	8.6	TD	1.0
HW	8.0	LAHL	12.6
SL	3.7	HND	8.2
INS	3.2	LAD	1.7
IOS	3.0	FEM	12.4
NED	2.0	TIB	12.8
UEW	2.1	FTL	11.4

Figure 1. doi

The specimen of *Amolops himalayanus* from China in preservative. **A** Dorsal view; **B** ventral view.

Hind-limb moderate long; tibia almost equal to femoral length (TIB/FEM 1.03); relative length of toes IV > V > III > II > I; all toe tips expanded into discs with circummarginal grooves; webbing between toes deeply incurved; subarticular tubercles distinct, oval, formula 1, 1, 2, 3, 2; supernumerary tubercles absent; inner metatarsal tubercle elongated; outer metatarsal tubercle absent.

Dorsal and lateral surfaces of head and body smooth; dorsal surface of fore-limb smooth, dorsal surface of hind-limb with many small tubercles; supratympanic fold

present; discontinuous glandular dorsolateral fold from rear of eye to near vent; ventral surface smooth.

Colouration in life

Dorsal surface of the head and body green, some small black spots on dorsum; dorsal surface of limbs yellowish-green with some brown crossbars; lateral surface of head light green, a black stripe below canthus rostralis from snout tip across eyes to supratympanic fold; upper lip light yellowish-green with irregular brown spots; lateral surface of body light green, a large brown spot just behind supratympanic fold on each side; ventral surface of head light yellow, lower lip yellowish-brown; ventral surface of light greenish-yellow; ventral surface of limbs yellowish-brown (Fig. 2).

Figure 2. doi

The specimen of *Amolops himalayanus* from China in life. **A** Dorsal view; **B** ventral view; **C** left view; **D** right view.

Ecological notes

This specimen was found at night in the shrubland near a river on a leaf of an herbaceous plant (Fig. 3). Other amphibian species found in sympatry include *Nanorana blanfordii* (Boulenger, 1882), *N. liebigii* (Günther, 1860), *Raorchestes yadongensis* Zhang, Shu, Liu, Dong & Guo, 2022 and *Xenophrys pangdaensis* Shu, Li, Wu, Liu, He, Li, Zhang & Guo, 2023.

Recommended common name

We suggest 喜山湍蛙 (Pinyin: xǐ shān tuān wā) as the Chinese name of this species.

Figure 3. doi

Habitat of the specimen of *Amolops himalayanus* collected in China.

Analysis

Bayesian Inference and Maximum Likelihood analysis obtained similar results. The sequence of the specimen from Yadong, Xizang, China, clustered with the sequences of the syntype (BMNH1947.2.3.83) and other specimens of *Amolops himalayanus* from Nepal with strong support (Fig. 4). The genetic distance (uncorrected p-distance) between the sequence of the specimen from Yadong and the sequence of the syntype (BMNH1947.2.3.83) of *A. himalayanus* was only 0.7% and the genetic distances (uncorrected p-distance) between the sequence of the specimen from Yadong and the sequences of the specimens of *A. himalayanus* from Nepal ranged from 0.8% to 0.9% (Table 3).

Table 3.

Uncorrected pairwise genetic distances (%) between specimens of *Amolops himalayanus*, based on 16S sequences.

	1	2	3	4
1 BMNH 1947.2.3.83 (Syntype, India)				
2 SH 2789 (Nepal)	0			
3 KIZ 040227 (Nepal)	0	0		
4 KIZ 040228 (Nepal)	0.2	0.2	0.2	
5 KIZ 2017002 (China)	0.7	0.8	0.8	0.9

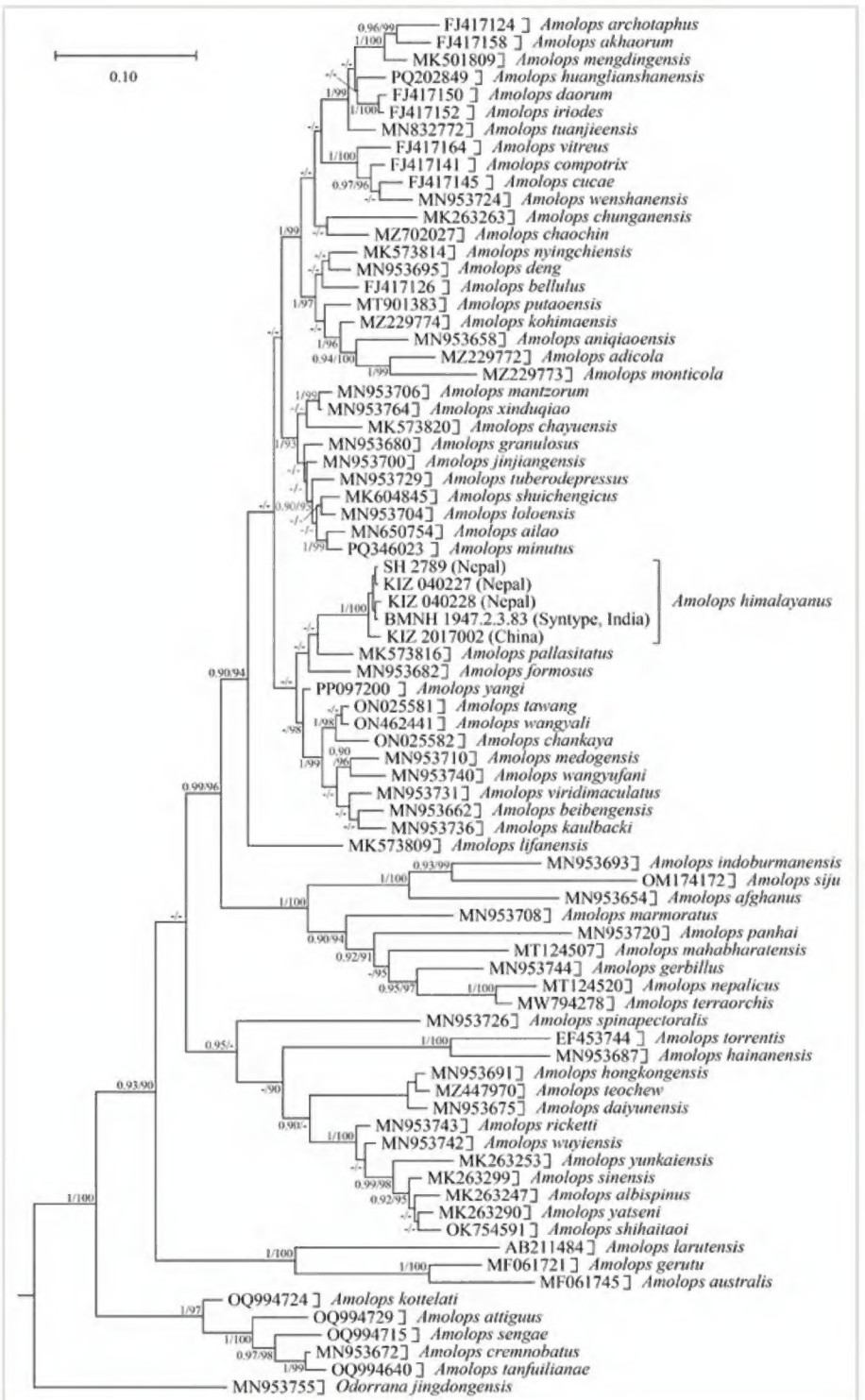

Figure 4. doi

Bayesian phylogenetic tree based on 16S sequences. The numbers after and behind the "/" indicate the Bayesian posterior probabilities and Maximum Likelihood ultrafast bootstrap values (> 0.90/90), respectively.

Discussion

In some species of *Amolops*, especially in the *A. viridimaculatus* group, the body colouration of juveniles usually differs significantly from that of adults (Mahony et al. 2022). Therefore, the juvenile specimen we collected from Xizang cannot be accurately identified by morphology. However, phylogenetic analysis strongly supported that this specimen belongs to *A. himalayanus*, with a genetic distance of only 0.7% between it and the syntype (BMNH1947.2.3.83) of *A. himalayanus* in 16S gene sequences. Thus, we confirmed that *A. himalayanus* is distributed in China.

Amolops himalayanus has rarely been reported since it was described more than a hundred years ago. Previously, this species was recorded in Nepal and Bhutan and the photos in life and breeding ecology of this species have been reported (Nidup et al. 2016 , Limbu et al. 2020). Subsequently, Mahony et al. (2022) pointed out that the species previously recorded as *A. himalayanus* in Bhutan actually belonged to *Amolops wangyali* Mahony, Nidup, Streicher, Teeling & Kamei, 2022 and removed *A. himalayanus* from Bhutan's herpetofauna. In addition, Mahony et al. (2022) confirmed the distribution of *A. himalayanus* in Nepal based on genetic data, but did not provide any morphological data or photos of *A. himalayanus*. Although there are some photos of alleged *A. himalayanu* available on the website iNaturalist (https://www.inaturalist.org/), even some of them having been taken from the type locality of *A. himalayanu*, they have not undergone strict identification. Therefore, so far, no reliable photos of *A. himalayanus* in life have been formally reported. Herein, we record *A. himalayanus* from China and provide photos of this species in life for the first time, based on a genetically confirmed specimen, even though it is a juvenile.

Previously, *Amolops himalayanus* was confirmed to be distributed in Darjeeling, India, as well as in Ilam and Mechi, Nepal. This study recorded for the first time the distribution of this species in China and the new collection site extended the distribution range of this species to the northeast by approximately 80 km (Fig. 5). Unfortunately, we only collected one specimen of this species and it is a juvenile. Future field surveys in this area should be strengthened to understand the population status of this species in China.

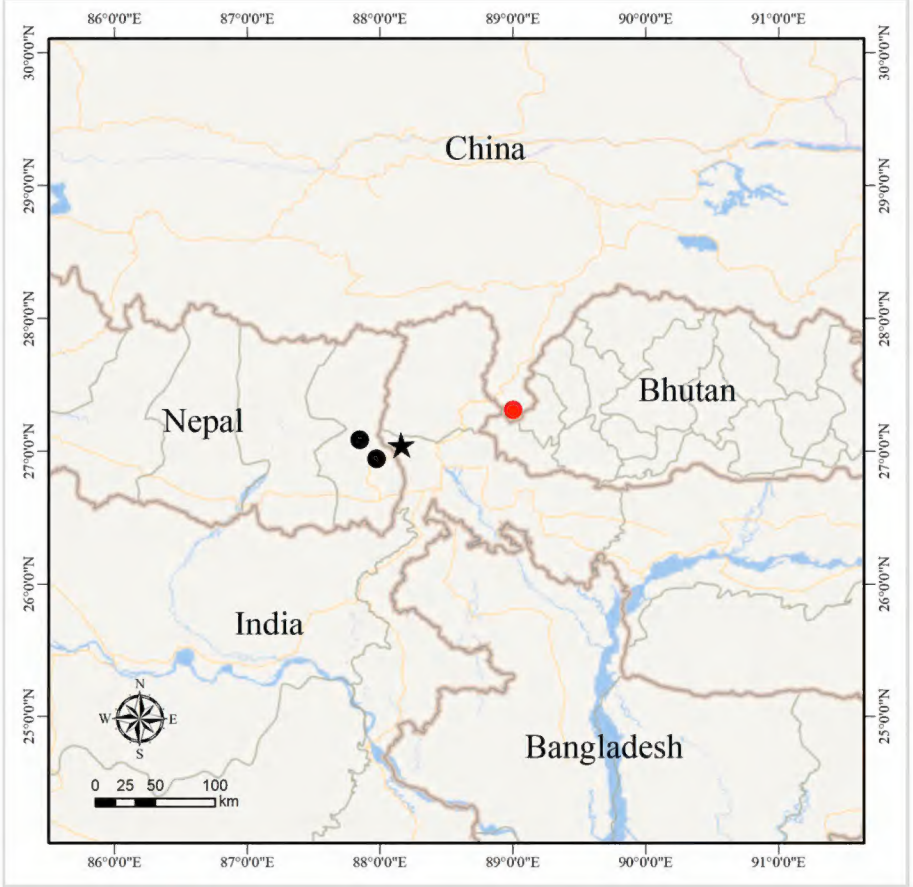

Figure 5. doi

Map showing the type locality of *Amolops himalayanus* in Darjeeling, India (black star), the confirmed distributions in Ilam and Mechi, Nepal (black dots) and the new collection site from Yadong, Xizang, China (red dot).

Acknowledgements

We would like to thank the border guards of Xizang, China, for their support and help to our field survey. We are grateful to the editors and reviewers for their valuable comments on the manuscript. This work was supported by the General Survey on Forest Harmful Organisms project in Xizang (Grant No. 2017-059), "Support Plan for Revitalizing Yunnan talents" Youth Talent Special Project (Grant No. 220621198312300734, 15230119840814102O), the Natural Science Foundation of Yunnan Province of China (Grant No. 202201AT070046), Biological Resources Programme, Chinese Academy of Sciences, the Position of Bioclassonomist of Chinese Academy of Sciences (Grant No. CAS-TAX-24) and Foundation of Yunnan Key Laboratory of Biodiversity Information, Kunming Institute of Zoology, Chinese Academy of Sciences.

References

- Burland T (2000) DNASTAR's Lasergene Sequence Analysis Software. Methods in Molecular Biology 132: 71-91. https://doi.org/10.1385/1-59259-192-2:71
- Dever J, Fuiten A, Konu Ö, Wilkinson J (2012) Cryptic torrent frogs of Myanmar: An examination of the *Amolops marmoratus* species complex with the resurrection of *Amolops afghanus* and the identification of a new species. Copeia 2012: 57-76. https://doi.org/10.1643/ch-10-180
- Frost D (2025) Amphibian species of the World: An Online Reference. Version 6.2. https://amphibiansoftheworld.amnh.org/index.php. Accessed on: 2025-1-27.
- Hedges S (1994) Molecular evidence for the origin of birds. Proceedings of the National Academy of Sciences 91: 2621-2624. https://doi.org/10.1073/pnas.91.7.2621
- Huang Z, Huang J, Liu X, Ai R, Yang Z, Li Y, Yuang Z (2025) A New Species Distribution Record of *Amolops* in China—*Amolops compotrix*. Journal of Southwest Forestry University 45 (2): 1-6. https://doi.org/10.11929/j.swfu.202404062
- Kalyaanamoorthy S, Minh B, Wong T, von Haeseler A, Jermiin L (2017) ModelFinder: fast model selection for accurate phylogenetic estimates. Nature Methods 14: 587-589. https://doi.org/10.1038/nmeth.4285
- Katoh K, Standley D (2013) MAFFT Multiple Sequence Alignment Software Version 7: Improvements in Performance and Usability. Molecular Biology and Evolution 30: 772-780. https://doi.org/10.1093/molbev/mst010
- Limbu A, Dophu, Biswa A, Sonam L, Norbu K, Gyeltshen D, Basnet D, Gyeltshen J, Nidup T (2020) Breeding Ecology of *Amolops himalayanus* (Amphibia: Anura: Ranidae) in Bodidrang Stream, Trashigang District, Bhutan. Asian Journal of Biology 10: 56-64. https://doi.org/10.9734/ajob/2020/v10i130100
- Li S, Liu J, Ke X, Cheng G, Wang B (2024) A new species of *Amolops* (Amphibia, Anura, Ranidae) from Guizhou Province, China. ZooKeys 1189: 33-54. https://doi.org/10.3897/zookeys.1189.115621
- Liu S, Mo M, Guo J, Lu Y, Wang W, Zhang W, Rao D, Li S (2024) First record of *Amolops truongi* Pham, Pham, Ngo, Sung, Ziegler & Le, 2023 (Anura, Ranidae) from China. Herpetozoa 37: 149-156. https://doi.org/10.3897/herpetozoa.37.e121610

- Liu S, Hou M, Mo M, Lu Y, Guo J, Wang W, Zhang W, Rao D, Li S (2025) A new species of the *Amolops monticola* group (Anura, Ranidae) from southern Yunnan, China. Journal of Asia-Pacific Biodiversity 18: in press. https://doi.org/10.1016/j.japb.2024.08.002
- Mahony S, Nidup T, Streicher J, Teeling E, Kamei R (2022) A review of torrent frogs (*Amolops*: Ranidae) from Bhutan, the description of a new species, and reassessment of the taxonomic validity of some *A. viridimaculatus* group species aided by archival DNA sequences of century-old type specimens. The Herpetological Journal 32: 142-175. https://doi.org/10.33256/32.3.142175
- Nguyen LT, Tapley B, La TV, Rowley JL (2025) A new species of *Amolops monticola* group (Amphibia: Ranidae) from Hoang Lien Range, northwest Vietnam. Zootaxa 5594 (3): 485-508. https://doi.org/10.11646/zootaxa.5594.3.3
- Nidup T, Gyeltshen D, Penjor S, Pearch M (2016) The first record of *Amolops himalayanus* (Anura: Ranidae) from Bhutan. Herpetological Bulletin 136: 13-18.
- Pham A, Song N, Pham C, Le M, Ziegler T, Nguyen T (2019) A new species of *Amolops* (Anura: Ranidae) from Vietnam. Raffles Bulletin of Zoology 67: 363-377. https://doi.org/10.26107/RBZ-2019-0027
- Tang S, Sun T, Liu S, Luo S, Yu G, Du L (2023) A new species of cascade frog (Anura: Ranidae: *Amolops*) from central Yunnan, China. Zoological Letters 9: 15. https://doi.org/10.1186/s40851-023-00214-9
- Wu Y, Yan F, Stuart B, Prendini E, Suwannapoom C, Dahn H, Zhang B, Cai H, Xu Y, Jiang K, Chen H, Lemmon A, Lemmon E, Raxworthy C, Orlov N, Murphy R, Che J (2020) A combined approach of mitochondrial DNA and anchored nuclear phylogenomics sheds light on unrecognized diversity, phylogeny, and historical biogeography of the torrent frogs, genus *Amolops* (Anura: Ranidae). Molecular Phylogenetics and Evolution 148: 106789. https://doi.org/10.1016/j.ympev.2020.106789
- Wu Y, Yu Z, Lu C, Zhang Y, Dong W, Liu X, Kilunda FK, Xiong Y, Jiang Y, Ouyang H, Fu Z, He Y, Yuan Z, Che J (2024) A new species of the genus *Amolops* (Amphibia: Ranidae) and the first national record of *Amolops vitreus* from China. Vertebrate Zoology 74: 343-357. https://doi.org/10.3897/vz.74.e108013
- Wu Y, Yu Z, Kilunda F, Lu C, Li J, Li Y, Shi Y, Che J (2025) A new species of the genus *Amolops* (Anura, Ranidae) from the Gaoligong Mountains, China. Zookeys 1227: 349-367. https://doi.org/10.3897/zookeys.1227.131357